

Scientific Reasoning Requirement at IU Northwest

What is the pedagogical purpose of the Scientific Reasoning requirement beyond the foundation level?

The purpose of the Scientific Reasoning (SR) requirement is to provide students with practice in using the scientific method in order to evaluate scientific claims in widely debated areas such as stem cell research, global climate change, exposure to environmental toxins, and factors in human health and behavior. The courses should include substantive feedback provided by an instructor well-acquainted with the standards of scientific concepts and reasoning in a particular discipline. Departments and divisions would be allowed considerable latitude in defining what sorts of scientific reasoning experiences are most appropriate for their majors; consequently the sorts of SR courses offered by different departments/divisions will vary.

What are the learning outcomes for the SR requirement?

The outcomes for the LT requirement provide that IU Northwest graduates will:

- Demonstrate the ability to identify and explain how scientific theories are formulated, tested, and validated.
- Demonstrate the ability to integrate and apply scientific methods which include defining parameters of problem, seeking relevant information, subjecting proposed solutions to rigorous testing, and drawing conclusions based on the process.

What are the standard guidelines and requirements for SR credit?

To qualify for SR credit, the course must require students to create papers, posters, or demonstrations that document mastery of the outcomes listed above. The instructor is expected to provide criticism (in the form of written or electronic notes attached to assignments or through private conferences) on the scientific reasoning aspects of the course.

What sorts of classes carry SR credit and who teaches them?

Advanced scientific reasoning courses must be taught **at the 200-level or above** by a **qualified instructor**. In most cases the instructor will be a regular member of the faculty; under unusual circumstances the instructor may be a visitor or an adjunct faculty with the approval of the department/school.

How big are SR courses and sections?

Classes designated for SR credit should be limited to 30 students.

Should students take SR courses in their own majors?

Whenever possible, students should take SR courses in their major since these courses may be relevant to their professional development. The intention of the SR requirement, however, is to encourage all students to learn the modes of scientific

reasoning that apply to important current problems in society rather than to prepare them to embark on careers in science.

When should students take SR courses and what are the prerequisites?

Students must satisfy the scientific reasoning foundation requirement, an introductory science course that includes a lab, before enrolling in advanced SR courses. SR courses are meant to further refine and develop scientific reasoning skills that will have applications to a variety of problems and questions our society considers important. Although many capstone courses and senior theses could carry SR credit, IU Northwest students could take an SR course as a sophomore or junior.

When is it appropriate for a student to receive a credit for SR by Special Arrangement?

It is appropriate only in exceptional cases and only with departmental and university approval and prior to enrollment. Students may meet the SR requirement in conjunction with individualized readings courses, supervised research, internships, or senior theses, as long as the total amount of scientific reasoning, the structure of the scientific reasoning assignments, and the commentary provided by the faculty member all meet the guidelines for SR credit.

Can a student earn SR credit for a course taken at another university?

IU Northwest will not consider coursework taken at another university for SR, unless the chair/dean in the student's major specifically makes such a request in writing. As evidence that a student has successfully completed scientific reasoning exercises comparable to those employed in the department's own SR courses, the request must be accompanied by a copy of the course syllabus and all the course products with instructor's comments.

How can faculty develop a new SR class and what do they need to do to get it approved?

Units that wish to offer SR courses should submit requests for a new course or change to an existing course to their school/college curriculum committee. That committee will verify that the proposed course meets the general SR guidelines. A signed copy of the form for a new course or change to the existing course with a syllabus must accompany the request.

Who will approve the SR designation?

A course will be designated as an SR course after the approval by the course originating school/college curriculum committee and then by the IU Northwest Curriculum Committee.